BID ALTERNATE NO. 2
BULB-TEE BEAM SUPERSTRUCTURE
SUMMARY OF ESTIMATED QUANTITIES

ITEM NO.	ITEM DESCRIPTION	MEASUREMENT		N.F. SPRUCE CREEK BRIDGE NO. 373-14.4
		METHOD	UNIT	
15101(B)	MOBILIZATION	LSQ	Lump Sum	1
15221(B)	CONSTRUCTION SURVEYING AND STAKING	LSQ	Lump Sum	1
15713(B)	SOIL EROSION AND POLLUTION CONTROL	LSQ	Lump Sum	1
15722(B)	STRAW WATTLE	DQ	Lineal Foot	330
20102(B)	CLEARING AND GRUBBING	LSQ	Lump Sum	1
20304(B)	REMOVAL OF EXISTING TIMBER BRIDGE	LSQ	Lump Sum	1
20404(B)	ROADWAY EXCAVATION	DQ	Cubic Yard	50
20420(B)	DRAINAGE EXCAVATION, TYPE II, DRAIN DIP	AQ	Each	1
20806(B)	STRUCTURE EXCAVATION	LSQ	Lump Sum	1
25101(B)	PLACED RIPRAP, CLASS 5 MACHINE PLACED (GOVERNMENT SOURCE)	AQ	Cubic Yard	90
30111(B)	CRUSHED AGGREGATE, SURFACING (GOVERNMENT SOURCE)	DQ	Cubic Yard	51
55301	PRECAST PRESTRESSED CONCRETE STRUCTURAL MEMBER, BULB-TEE BEAM	AQ	Each	3
553A01(C)	PRECAST CONCRETE MEMBER, GRADE BEAM	AQ	Each	2
55705(C)	TREATED STRUCTURAL TIMBER, GLUED LAMINATED, CURB	DQ	MBF	1.01
62201(B)	EQUIPMENT RENTAL, HYDRAULIC EXCAVATOR WITH THUMB	AQ	Hour	8
62202(B)	EQUIPMENT RENTAL, LARGE DUMP TRUCK	AQ	Hour	8
62503(B)	SEEDING, DRY METHOD	LSQ	Lump Sum	1
62509(B)	MULCHING, DRY METHOD	LSQ	Lump Sum	1
62601(B)	CLUMP PLANTED VEGETATION (ALDERS, WILLOWS, ETC.)	AQ	Each	20
63305(B)	WOOD POSTS	AQ	Lineal Foot	36
63306(B)	OBJECT MARKERS	AQ	Each	4
64810(B)	ROCK WEIR STEP POOL	AQ	Each	5

DQ = Design Quantity; AQ= Actual Quantity

DESIGN NOTES:

BRIDGE DESIGN: This structure is designed for HS 20-44 loading in accordance with AASHTO Standard Specifications for Highway Bridges, 17th edition, 2002.

HYDROLOGY AND HYDRAULICS: This structure is designed to pass a 100-year frequency flood with a stage elevation at 4487.7 (Freeboard is 7.9' at upstream edge of bridge.)

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REGION ONE

GENERAL NOTES:

SPECIFICATIONS: Construct the project in compliance with Federal Highway Administration Standard Specifications for Construction of Road and Bridges on Federal Highway Projects (FP-03) and applicable Special Project Specifications.

EROSION CONTROL PLAN: Submit a soil erosion plan to the Contracting Officer and have it approved prior to beginning any work. Provide methods to minimize disturbance to the streambed and to prevent runoff from the construction site from entering directly into the stream. Construct temporary means to divert the flow of the live stream as necessary to perform work. Do not pump water from excavations directly into the live stream.

DISPOSAL: All materials designated for removal become the property of the Contractor and are to be disposed of by removing from site in an environmentally safe manner in accordance with all Local, State and Federal requirements.

TEMPORARY TRAFFIC CONTROL: Submit a Temporary Traffic Control Plan to the Contracting Officer for review prior to construction.

CONCRETE: Use Class A(AE) for all Precast concrete, F'c = 5000 psi at 28 days with an entrained air content of 5% ± 1%. Finish all precast (non-prestressed) elements with a Class 2- Rubbed Finish.

Use Class "P" Prestressed concrete with a minimum 28 day compressive strength of 6000 psi (F'c = 6000 psi), except as noted below. As a minimum, concrete strength at transfer of prestress force shall be 4000 psi (F'ci = 4000 psi). Use Class P(AE) concrete in the top two inches of the prestressed beams with an entrained air content of 5% ±1%.

Make all concrete in accordance with an approved mix design. Chamfer all exposed edges of concrete and fillet all re-entrant angles 3/4" unless otherwise noted.

REINFORCING STEEL: Use non-prestressed reinforcing of the deformed type conforming to AASHTO M31 (ASTM A615), Grade 60. Concrete cover shall be as shown; where not shown it shall conform to AASHTO. Cut and bend steel in accordance with ACI 315.

PRESTRESSING STEEL: Use prestressing steel of 1/2" diameter, seven wire low-relaxation prestressing strand conforming to AASHTO M203, Grade 270.

Use a maximum jacking force for prestressing strand reinforcement of 0.85 f's or 35.14 kips. Maximum strand stress at transfer shall be 0.75 f's or 31.00 kips.

HARDWARE AND STRUCTURAL STEEL: Use steel shapes, plates and bars meeting the requirements of AASHTO M183 (ASTM A36). Galvanize all steel in accordance with AASHTO M111 (ASTM A123) except when covered by 1 inch or more of concrete. Use hardware meeting the requirements of ASTM A307 except as noted. Galvanize hardware in accordance with AASHTO M232 (ASTM A153) unless covered by 1 inch or more of concrete.

Weld in accordance with the Bridge Welding Code, AWS D1.5.

GLUED LAMINATED (GLU-LAM) MEMBERS: Furnish glued laminated, Curb and Curb Blocks of Coast Region Douglas Fir conforming to American Institute of Timber Construction (AITC) 117. Use members manufactured for wet condition use and industrial appearance grade meeting the Axial Combinations Identification No. 3, 4 or 5.

TREATMENT: After fabrication incise and pressure treat all lumber in accordance with AWPA C-28, above ground use, for glued laminates and AWPA C-2, soil and fresh water use for solid sawn members using pentachlorophenal meeting AWPA P-8 using AWPA P-9 Type A solvent. Penetration requirements are specified in AWPA.

FIELD TREATMENT: Furnish Copper naphthenate (2% solution) for field treating of wood. Carefully trim and give three brush coats of the field treatment solution to all abrasions and cuts made in the field. Pour perservative in all holes drilled in the field. Pour perservative in unused holes and plug with tight fitting, treated, hardwood dowels.

INSPECTION and CERTIFICATION: Furnish the following compliance certificates upon delivery:

A. Supplier certification, from a WWPA or WCLIB approved supplier, that all wood materials meet the requirements as to species and grade.
B. Certification of perservative, penetration in inches, and retention in pounds per cubic foot (assay method) by either a qualified testing and inspection agency or supplier certification. Supplier certification requires each solid piece to be stamped or branded with the ALSC quality mark.
C. Certification from a qualified inspection and testing agency indicating conformance of all glue laminated members with AITC 117-93.
D. Supplier certification that all treated wood materials were treated in conformance with and meet the requirements of WWPI's Best Management Practices for the Use of Treated Wood in Aquatic Enviornments.

TIMBER FABRICATION: Submit Shop drawings for all timber. Show all dimensions and fabrication details for all cut or bored timbers. Mark all pieces with the Piece Mark shown on the DRAWINGS, such as B1, S1, etc. Do not field drill holes unless shown on the DRAWINGS.

BY	DATE	REVISION DESCRIPTION

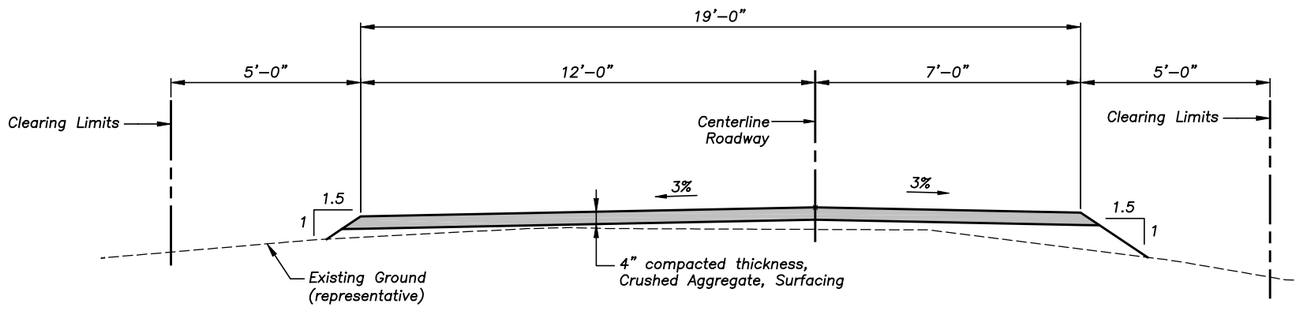
DESIGN CT PROJ. NO. 5380.01
DRAWN CT DATE MAR 08
CHECKED MJ SURVEYED DJ&A

DJ&A, P.C.
CONSULTING ENGINEERS & LAND SURVEYORS
3203 Russell Street, Missoula, Montana 59801-8591
Phone 406/721-4320 Fax 406/549-6371

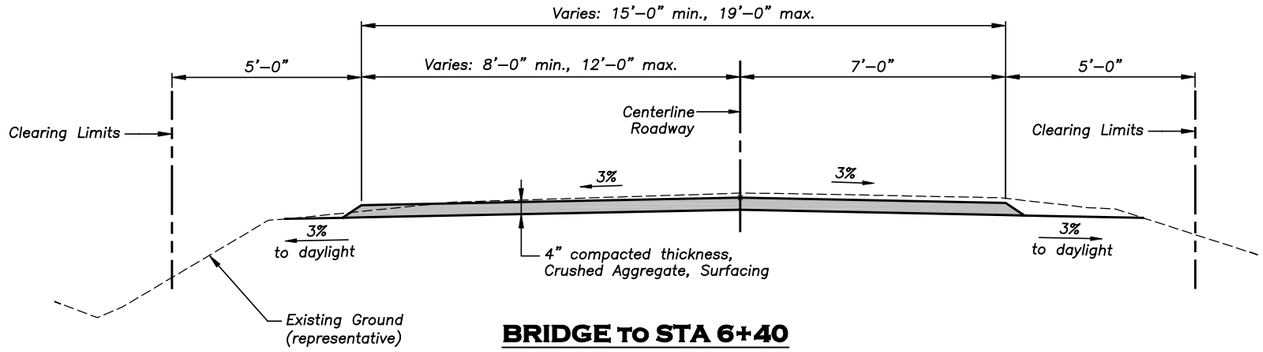
USFS - CLEARWATER N.F.
NORTH FORK SPRUCE CREEK
BRIDGE REPLACEMENT

BID ALTERNATE NO. 2
SUMMARY OF QUANTITIES
AND GENERAL NOTES

SHEET 2B OF 13B



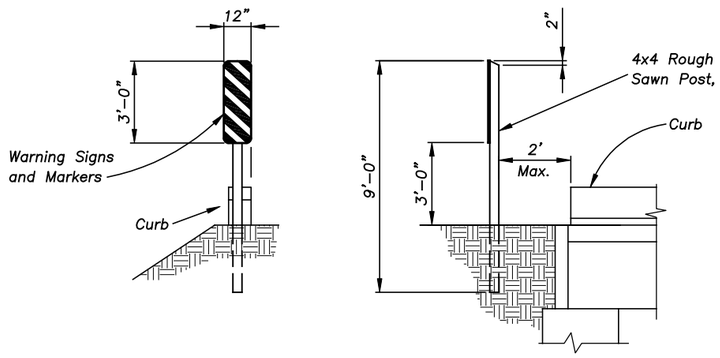
STA 4+00 TO BRIDGE



BRIDGE TO STA 6+40

TYPICAL SECTIONS

Scale: 1/4" = 1'



OBJECT MARKERS: Use 12"x 36" Type 3 object markers colored yellow and black. Use material meeting MUTCD 0M–3L or 0M–3R specifications. Fasten to post w/ (2) 1/4" ø machine bolts w/ washers. Field drill bolt holes. Install posts such that the inside edge of the reflectorized panel is on line with the inside edge of the curb.

OBJECT MARKER TYPE 3

Not to Scale

ROADWAY CENTERLINE COORDINATE TABLE

Point	Northing	Easting	Elevation	Description
800	9881.6150	10061.1609	4498.52	Sta. 4+00
801	9901.4800	10058.8415	4498.72	Sta. 4+20
802	9921.1693	10055.4977	4498.92	Sta. 4+40
803	9939.5232	10047.6839	4499.12	Sta. 4+60
804	9955.3733	10035.5722	4499.32	Sta. 4+80
820	9959.1557	10031.5942	4499.32	Sta. 4+85.49 ℄ Brg. Abutment 1
821	10002.1931	9984.2256	4499.32	Sta. 5+49.49 ℄ Brg. Abutment 2
807	10009.2606	9976.4468	4499.37	Sta. 5+60
808	10022.7098	9961.6442	4499.73	Sta. 5+80
809	10036.1590	9946.8415	4500.28	Sta. 6+00
810	10049.6082	9932.0388	4501.04	Sta. 6+20
811	10063.0574	9917.2361	4501.99	Sta. 6+40
812	10076.4150	9902.3512	4503.15	Sta. 6+60
813	10089.3917	9887.1334	4504.28	Sta. 6+80
814	10101.9580	9871.5750	4505.31	Sta. 7+00

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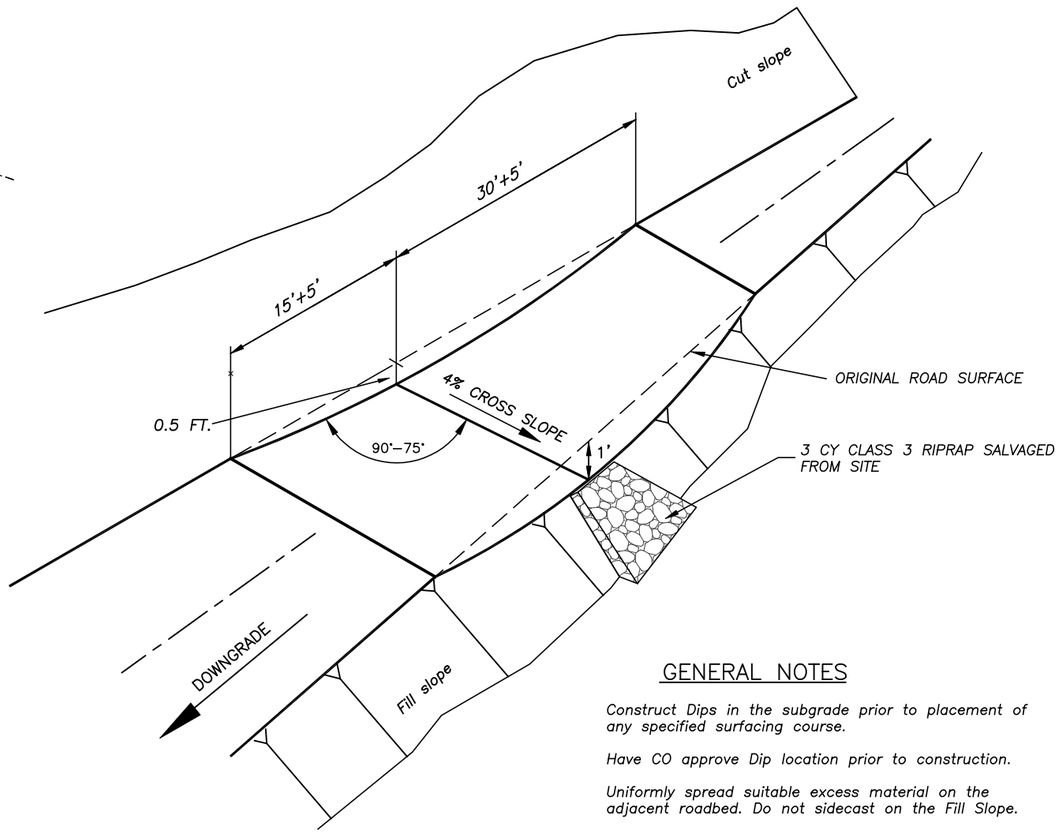
REGION ONE



GENERAL NOTES

Construct Dips in the subgrade prior to placement of any specified surfacing course.

Have CO approve Dip location prior to construction.

Uniformly spread suitable excess material on the adjacent roadbed. Do not sidecast on the Fill Slope.

DRAIN DIP DETAIL

BY	DATE	REVISION DESCRIPTION

DESIGN CT PROJ. NO. 5380.01
DRAWN CT DATE MAR 08
CHECKED MJ SURVEYED DJ&A

D&A, P.C.
CONSULTING ENGINEERS & LAND SURVEYORS
3203 Russell Street, Missoula, Montana 59801-8591
Phone 406/721-4320 Fax 406/549-6371

USFS - CLEARWATER N.F.
NORTH FORK SPRUCE CREEK
BRIDGE REPLACEMENT

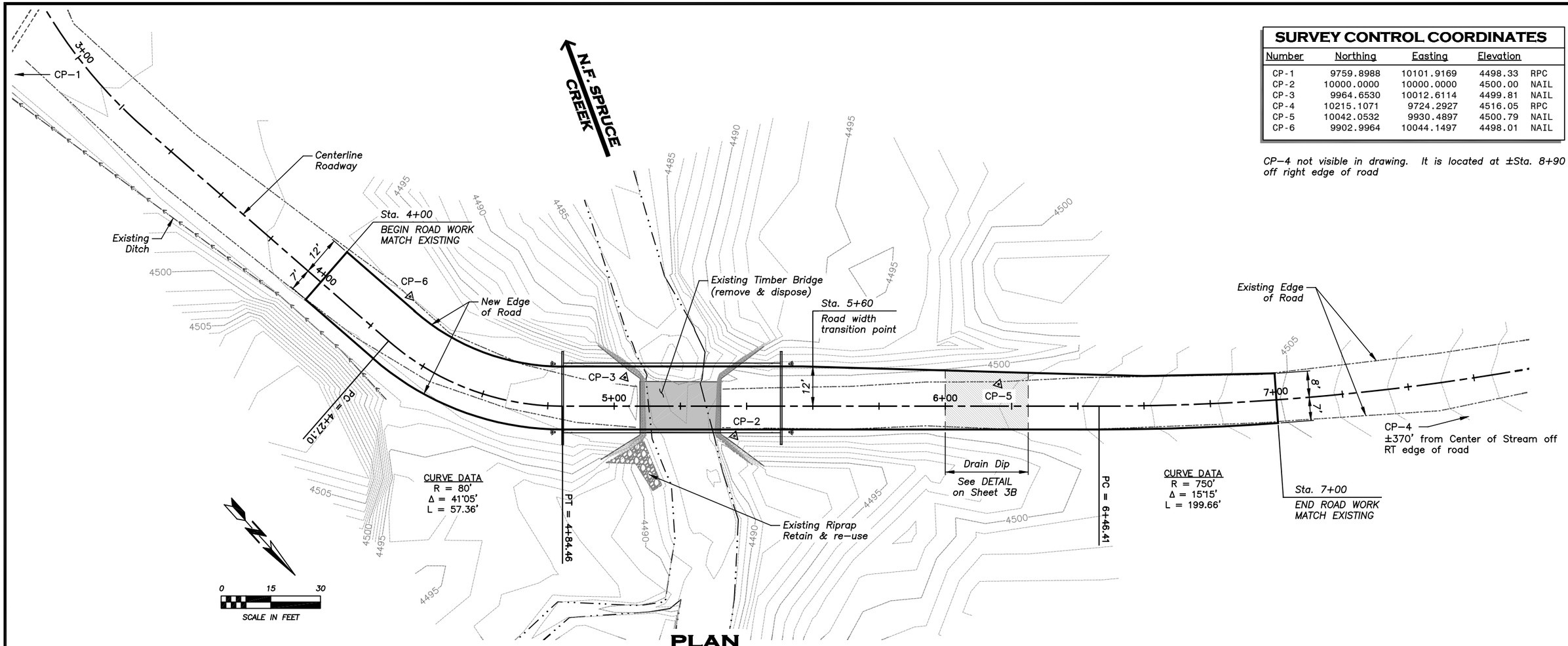
BID ALTERNATE NO. 2
ROADWAY TYPICAL SECTIONS
AND DETAILS

SHEET 3B OF 13B

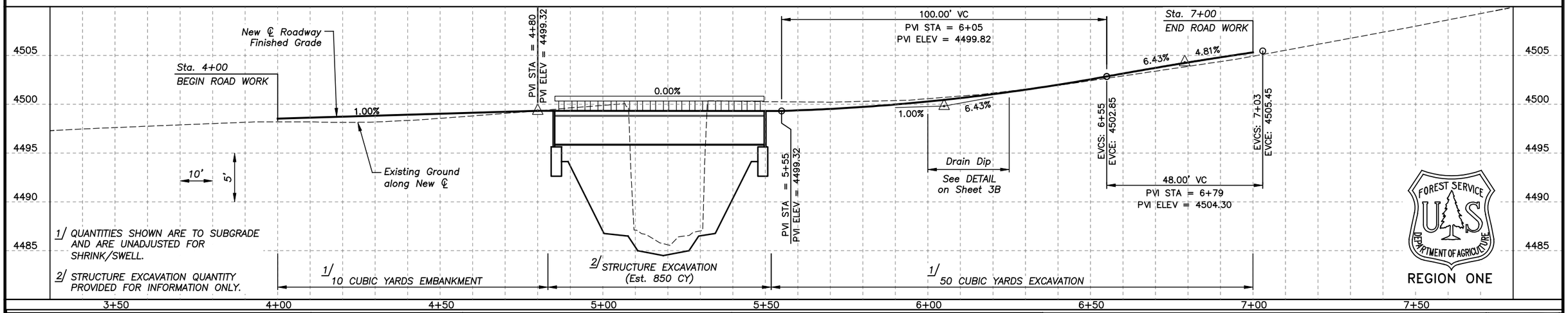
SURVEY CONTROL COORDINATES

Number	Northing	Easting	Elevation	
CP-1	9759.8988	10101.9169	4498.33	RPC
CP-2	10000.0000	10000.0000	4500.00	NAIL
CP-3	9964.6530	10012.6114	4499.81	NAIL
CP-4	10215.1071	9724.2927	4516.05	RPC
CP-5	10042.0532	9930.4897	4500.79	NAIL
CP-6	9902.9964	10044.1497	4498.01	NAIL

CP–4 not visible in drawing. It is located at ±Sta. 8+90 off right edge of road



PLAN



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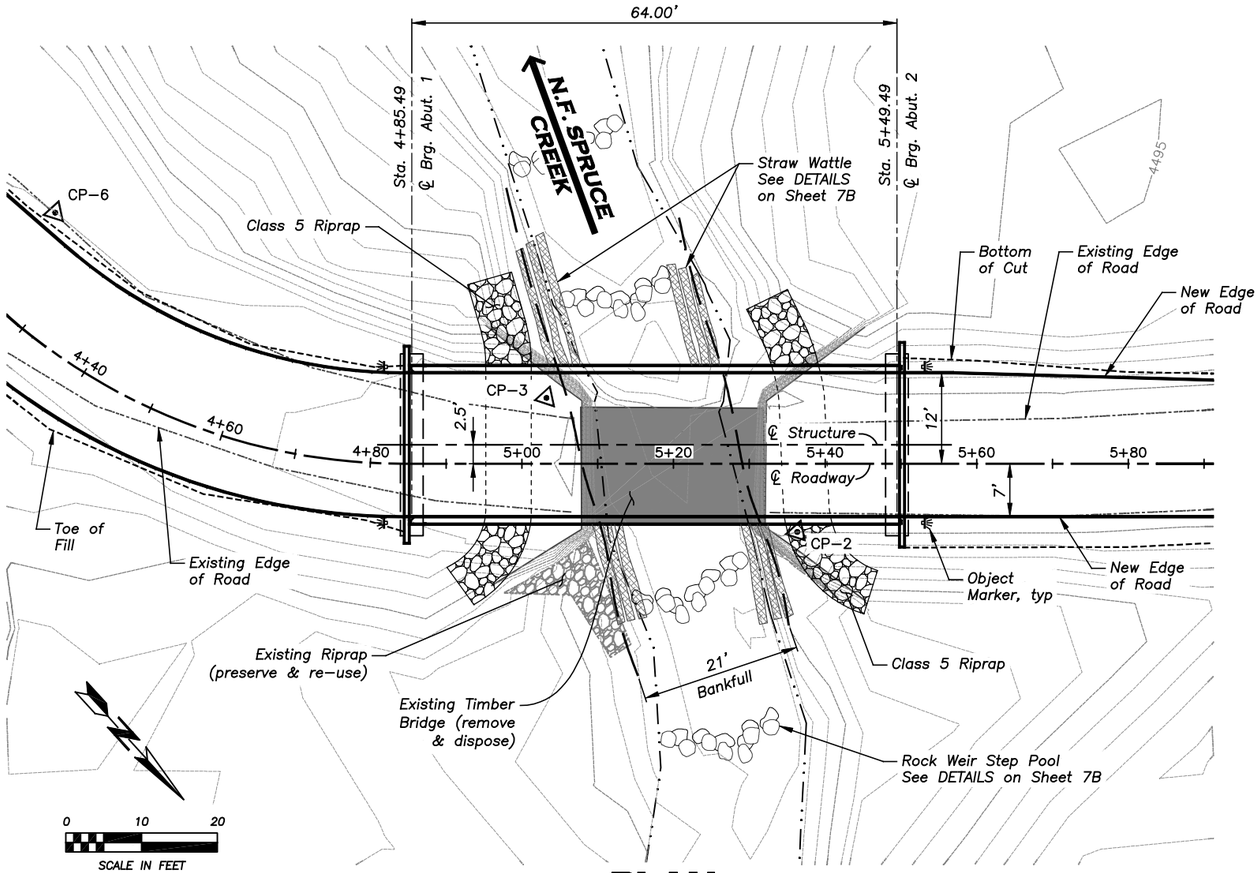
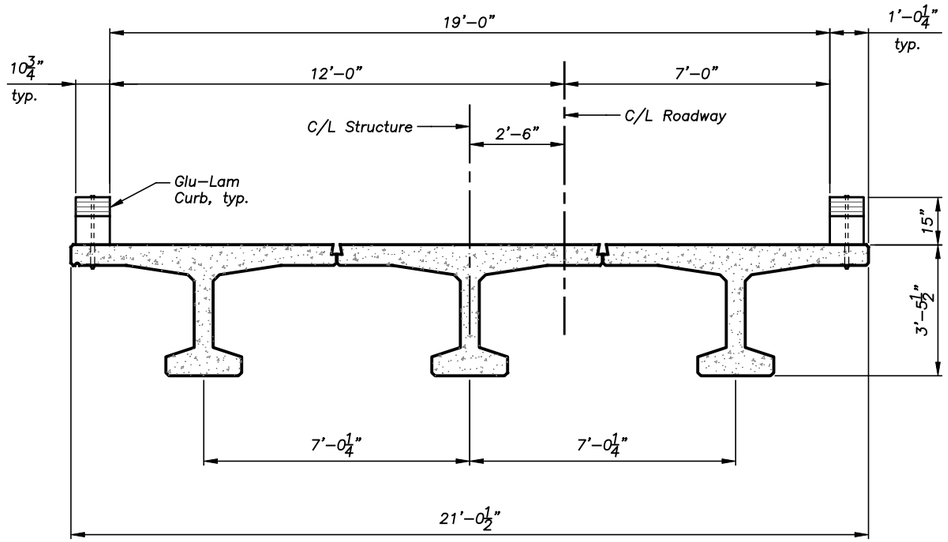
USFS - CLEARWATER N.F.
NORTH FORK SPRUCE CREEK
BRIDGE REPLACEMENT

BID ALTERNATE NO. 2
ROADWAY PLAN & PROFILE

SHEET 4B OF 13B

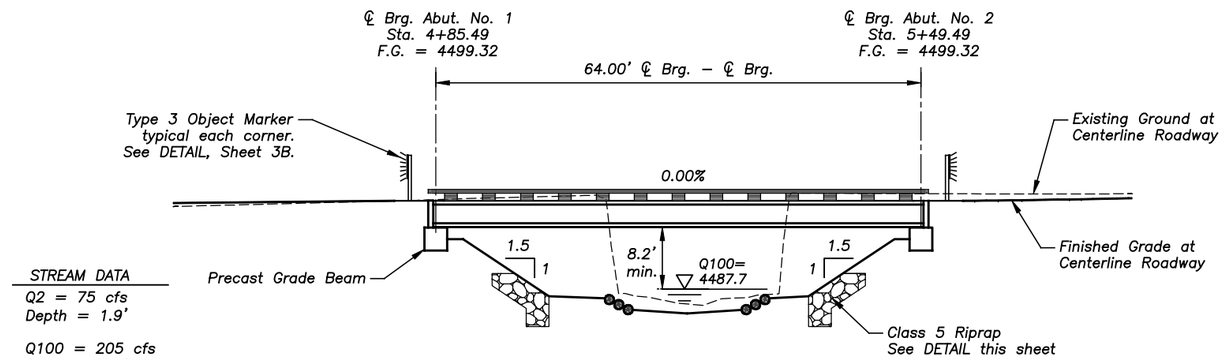


PLAN



TYPICAL SECTION

Scale: 1/4" = 1'



STREAM DATA

Q2 = 75 cfs
Depth = 1.9'

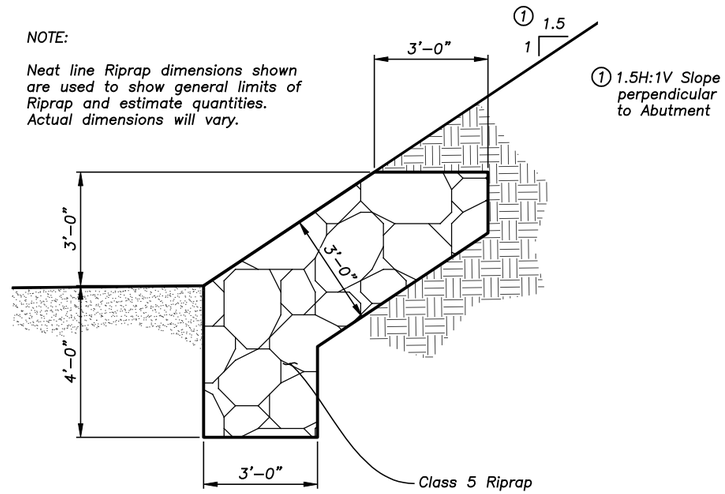
Q100 = 205 cfs
Depth = 2.5'

ELEVATION

Scale: 1" = 10'

NOTE:

Neat line Riprap dimensions shown are used to show general limits of Riprap and estimate quantities. Actual dimensions will vary.



RIPRAP DETAIL

Not to Scale

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US
DEPARTMENT OF AGRICULTURE
REGION ONE

BY	DATE	REVISION DESCRIPTION

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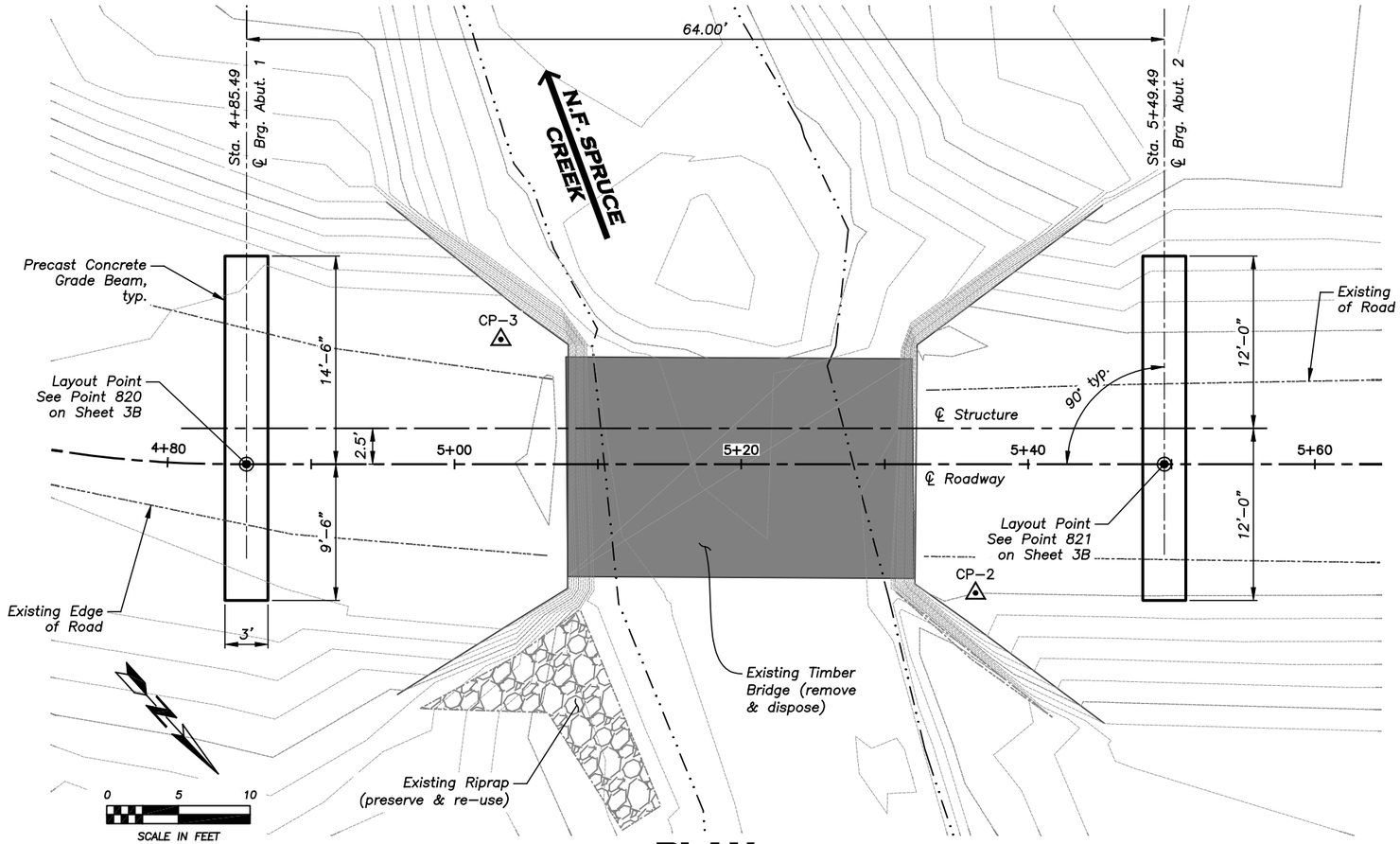
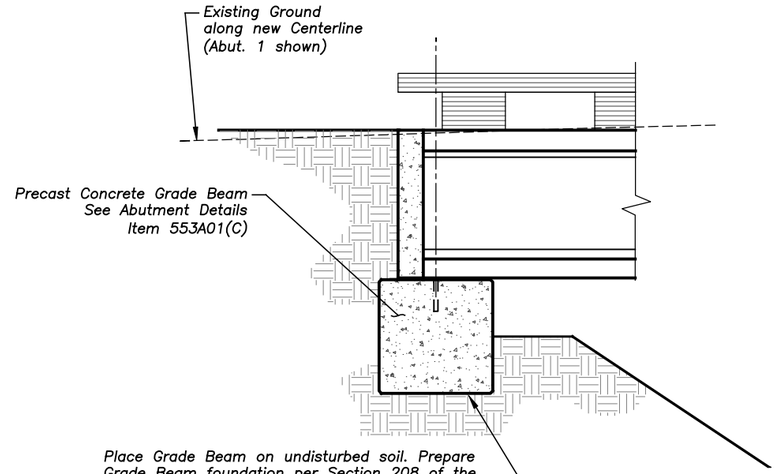
USFS - CLEARWATER N.F.
NORTH FORK SPRUCE CREEK
BRIDGE REPLACEMENT

BID ALTERNATE NO. 2
BRIDGE GENERAL LAYOUT

SHEET 5B OF 13B



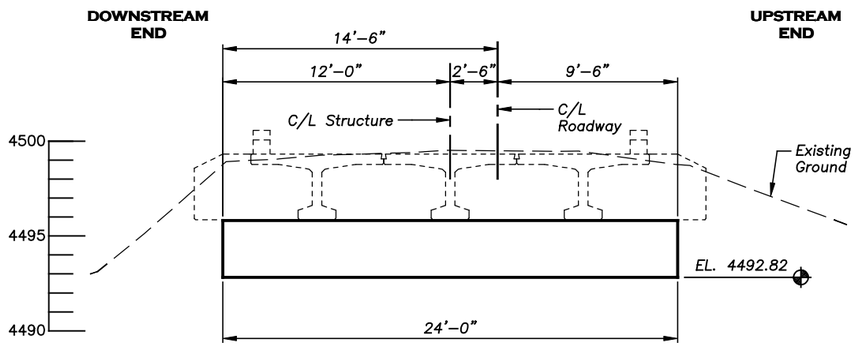
PLAN



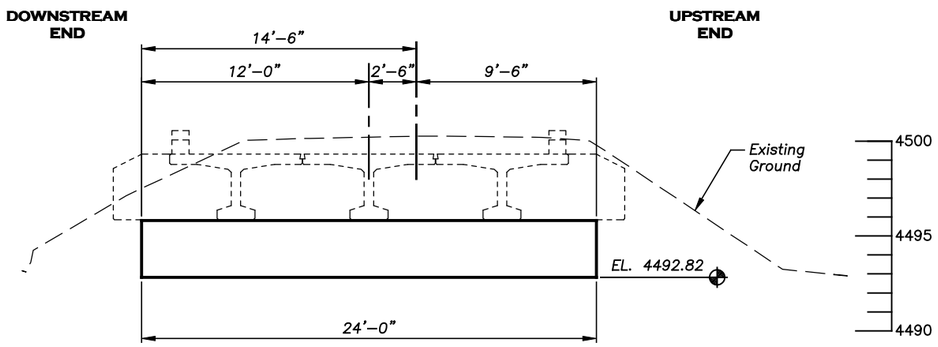
Place Grade Beam on undisturbed soil. Prepare Grade Beam foundation per Section 208 of the Standard Specifications. Ensure that the foundation is level and that there will be no voids under the Grade Beam. Do not place the Grade Beam until the foundation is approved by the CO.

TYPICAL SECTION

Scale: 1/4" = 1'



ABUTMENT 1



ABUTMENT 2

SECTIONS ALONG C/L BEARING (Looking Ahead On–Line)

Scale: 1/8" = 1'

REGION ONE

BY	DATE	REVISION DESCRIPTION

DESIGN CT PROJ. NO. 5380.01
DRAWN CT DATE MAR 08
CHECKED MJ SURVEYED DJ&A

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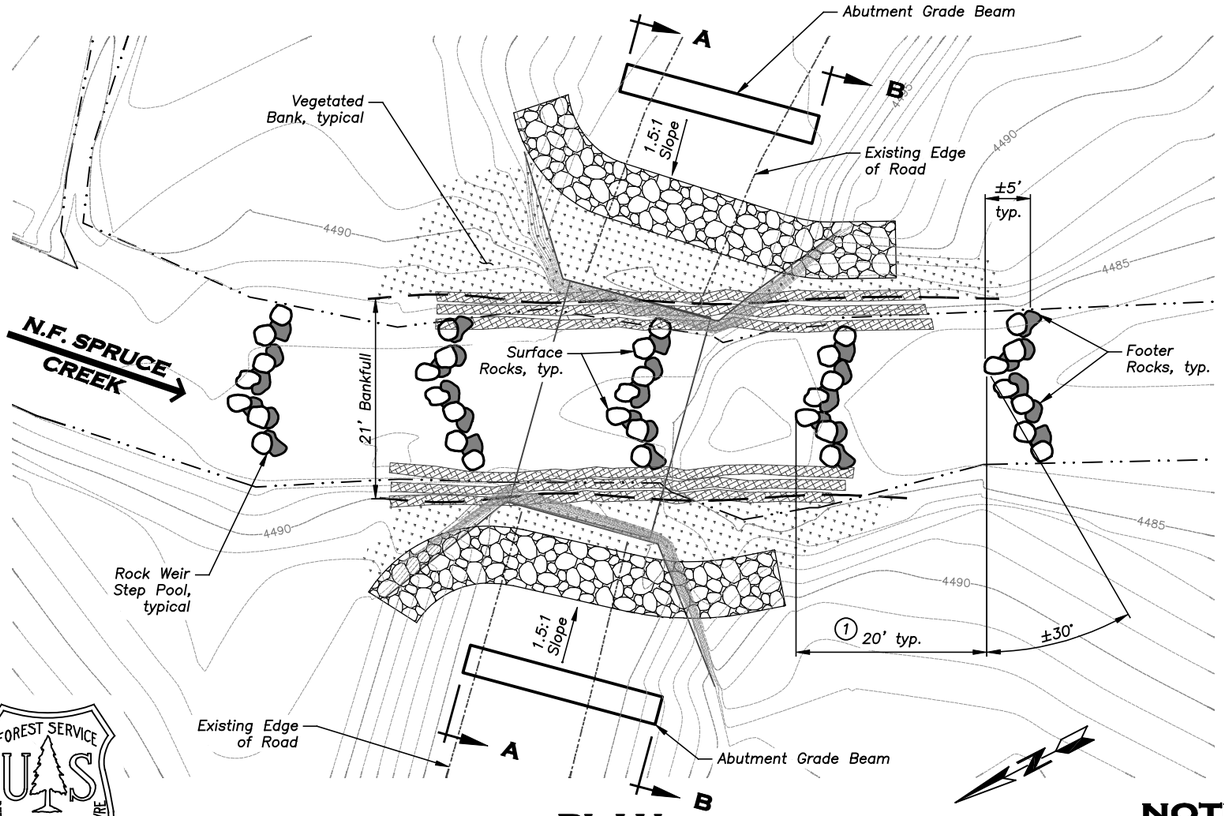
USFS - CLEARWATER N.F.
NORTH FORK SPRUCE CREEK
BRIDGE REPLACEMENT

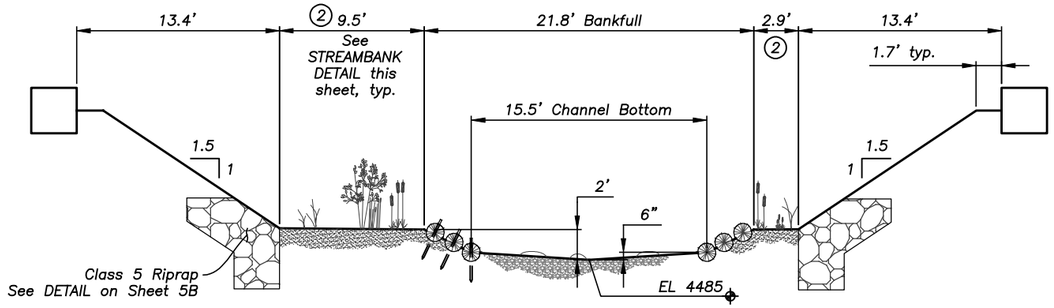
BID ALTERNATE NO. 2
FOUNDATION PLAN AND DETAILS

SHEET 6B OF 13B



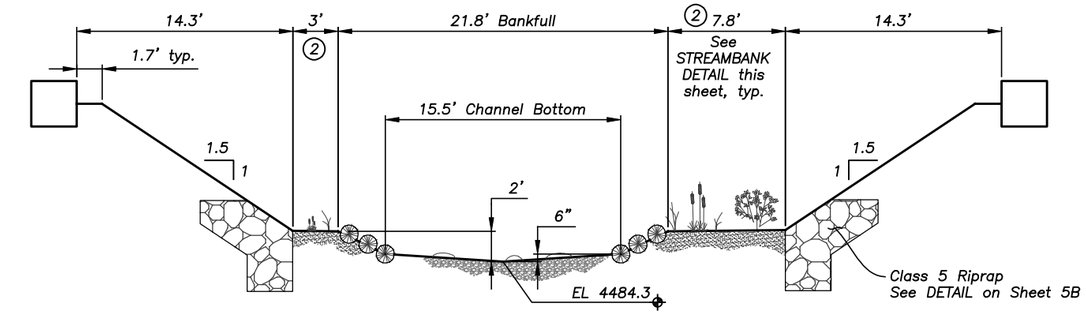
PLAN

Not to Scale



UPSTREAM CHANNEL SECTION A-A

Not to Scale

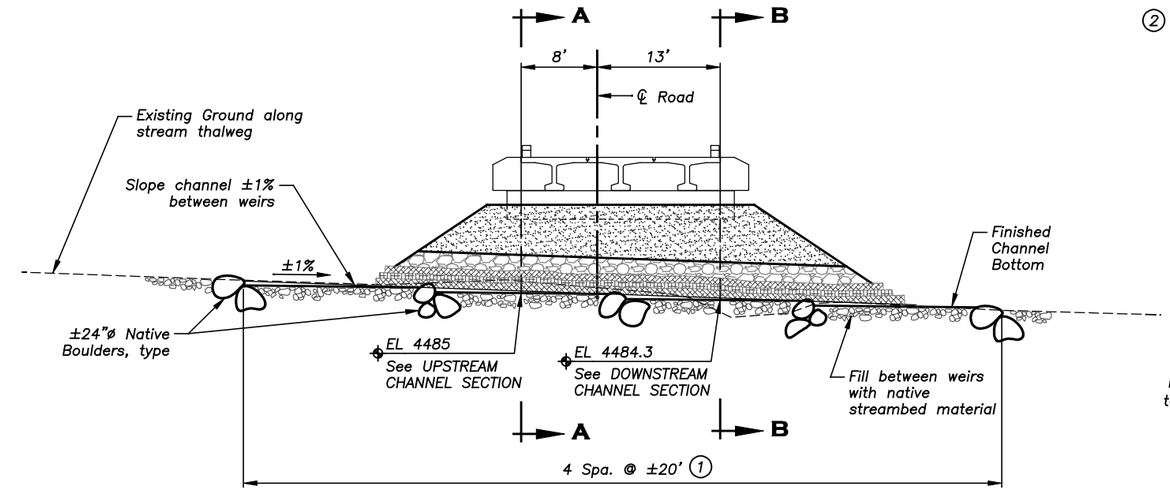


DOWNSTREAM CHANNEL SECTION B-B

Not to Scale

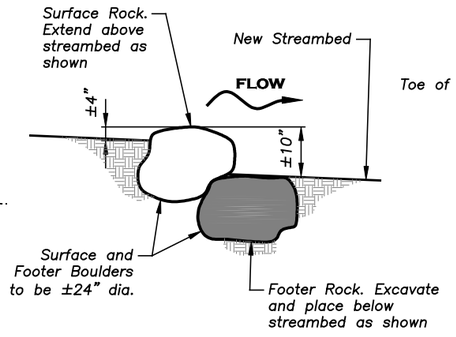
NOTES

1. SPACING AND CONFIGURATION MAY BE ADJUSTED IN THE FIELD BY THE CO TO FIT ACTUAL STREAMBED CONDITIONS
2. DIMENSION OF VEGETATED BANK VARIES— DIMENSIONS SHOWN APPLY AT SECTION A–A AND SECTION B–B ONLY.



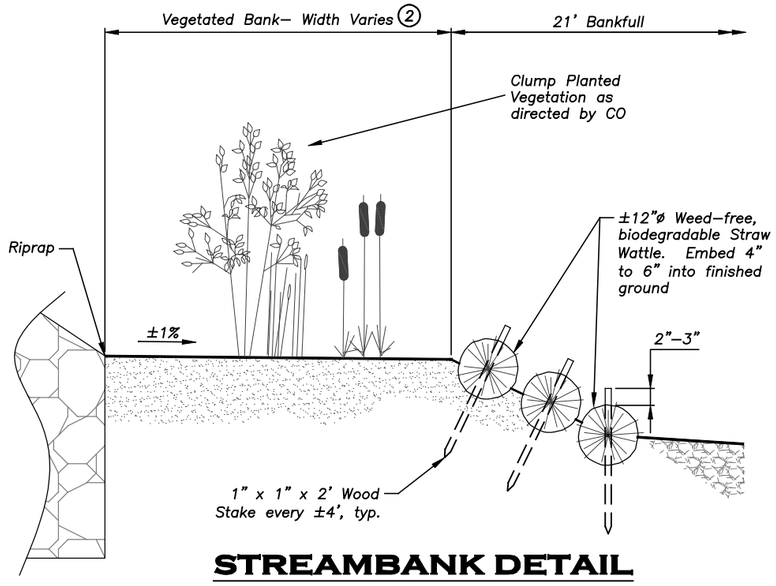
STREAM ELEVATION

Not to Scale



ROCK WEIR DETAIL

Not to Scale



STREAMBANK DETAIL

Not to Scale

BY	DATE	REVISION DESCRIPTION

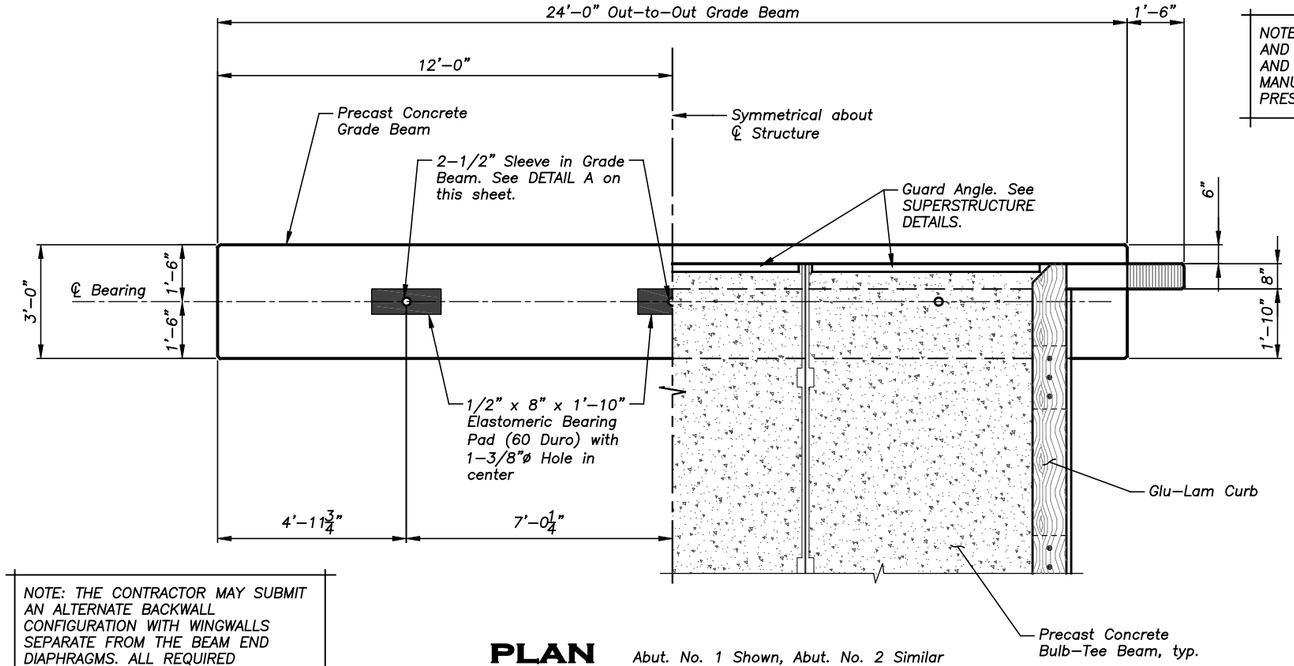
DESIGN CT PROJ. NO. 5380.01
DRAWN CT DATE MAR 08
CHECKED MJ SURVEYED DJ&A

DJ&A, P.C.
CONSULTING ENGINEERS & LAND SURVEYORS
3203 Russell Street, Missoula, Montana 59801-6591
Phone 406/721-4320 Fax 406/549-6371

USFS - CLEARWATER N.F.
NORTH FORK SPRUCE CREEK
BRIDGE REPLACEMENT

BID ALTERNATE NO. 2
STREAM DETAILS

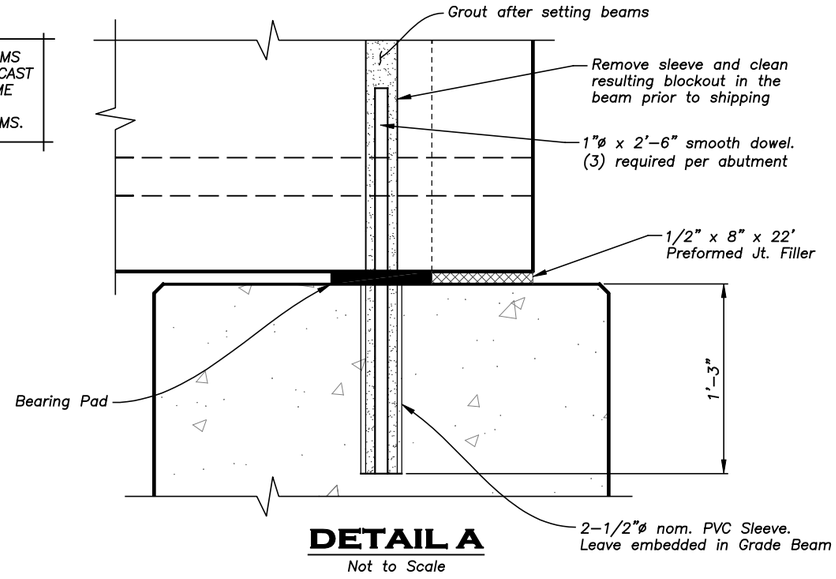
SHEET 7B OF 13B



PLAN *Abut. No. 1 Shown, Abut. No. 2 Similar*

Not to Scale

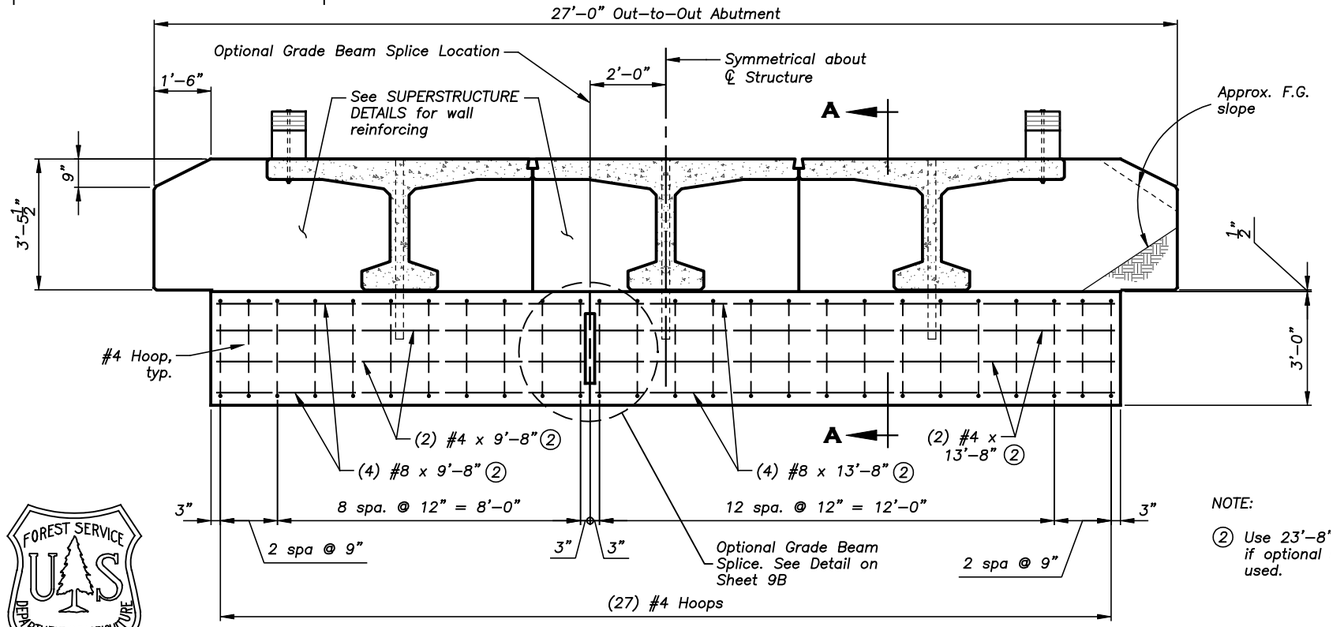
NOTE: PRECAST GRADE BEAMS AND WINGWALLS MUST BE CAST AND SUPPLIED BY THE SAME MANUFACTURER AS THE PRESTRESSED TRIDECK BEAMS.



DETAIL A

Not to Scale

NOTE: THE CONTRACTOR MAY SUBMIT AN ALTERNATE BACKWALL CONFIGURATION WITH WINGWALLS SEPARATE FROM THE BEAM END DIAPHRAGMS. ALL REQUIRED CONNECTION DETAILS AND MODIFICATIONS TO THE GRADE BEAMS ARE THE RESPONSIBILITY OF THE PRECAST SUPPLIER.

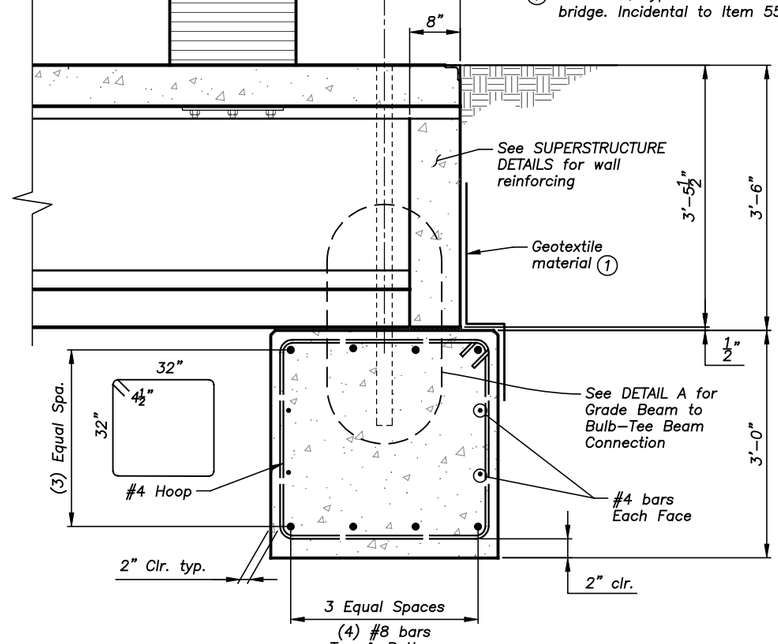


ELEVATION *LOOKING BACK ON–LINE*

Not to Scale *Abut. No. 1 Shown, Abut. No. 2 Similar*

NOTE:

(2) Use 23'–8" bar length if optional splice is not used.



SECTION A-A

Scale: 1" = 1'

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

REGION ONE

BY	DATE	REVISION DESCRIPTION

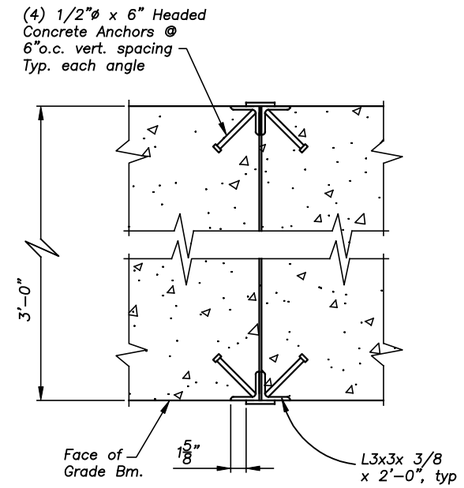
DESIGN CT PROJ. NO. 5380.01
DRAWN CT DATE MAR 08
CHECKED MJ SURVEYED DJ&A

DJ&A, P.C.
CONSULTING ENGINEERS & LAND SURVEYORS
3203 Russell Street, Missoula, Montana 59801-8591
Phone 406/721-4320 Fax 406/549-6371

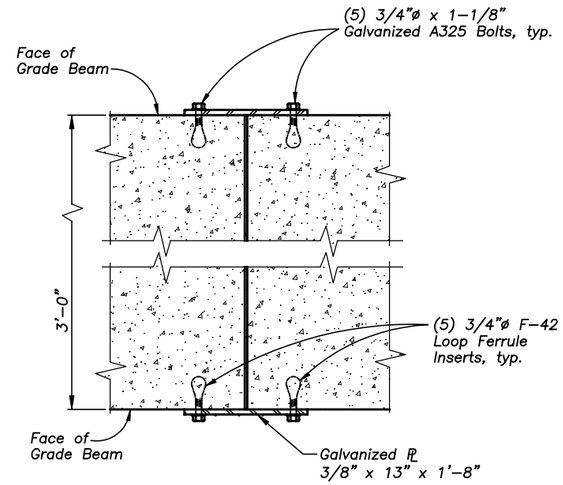
USFS - CLEARWATER N.F.
NORTH FORK SPRUCE CREEK
BRIDGE REPLACEMENT

BID ALTERNATE NO. 2
ABUTMENT PLAN & ELEVATION

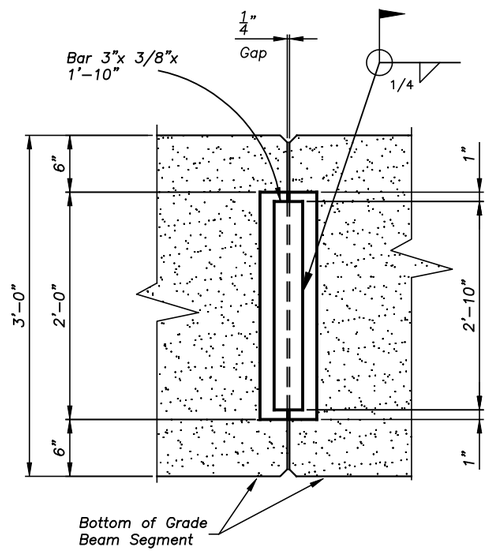
SHEET 8B OF 13B



PLAN SECTION

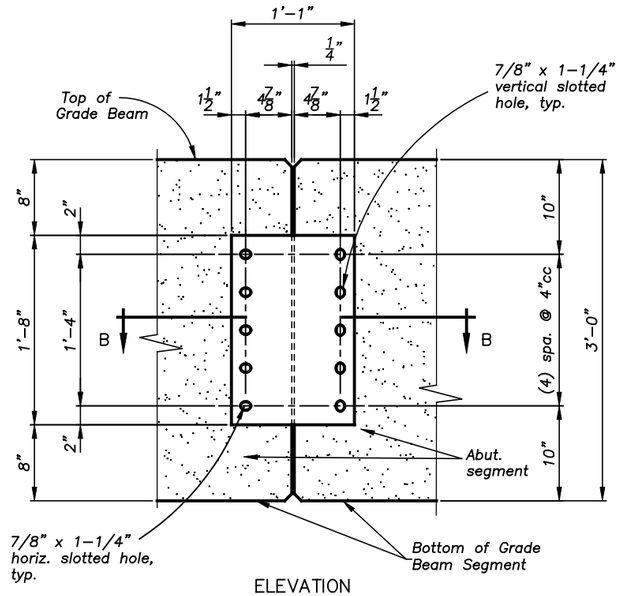


PLAN SECTION B-B



ELEVATION

FIELD WELD ALTERNATE



ELEVATION

FIELD BOLT ALTERNATE

OPTIONAL GRADE BEAM SPLICE DETAIL

Scale: 3/4" = 1'-0

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

REGION ONE

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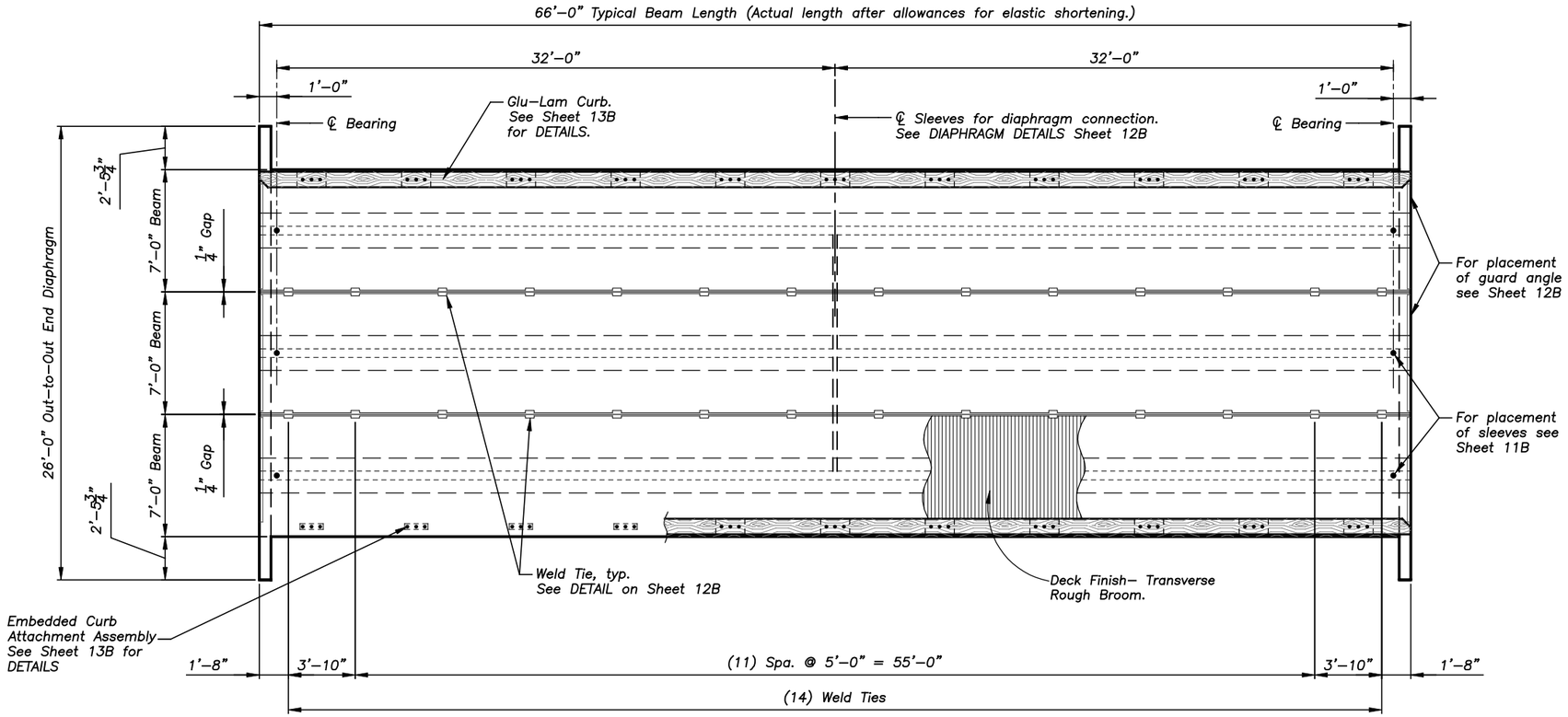
NORTH FORK SPRUCE CREEK
BRIDGE REPLACEMENT

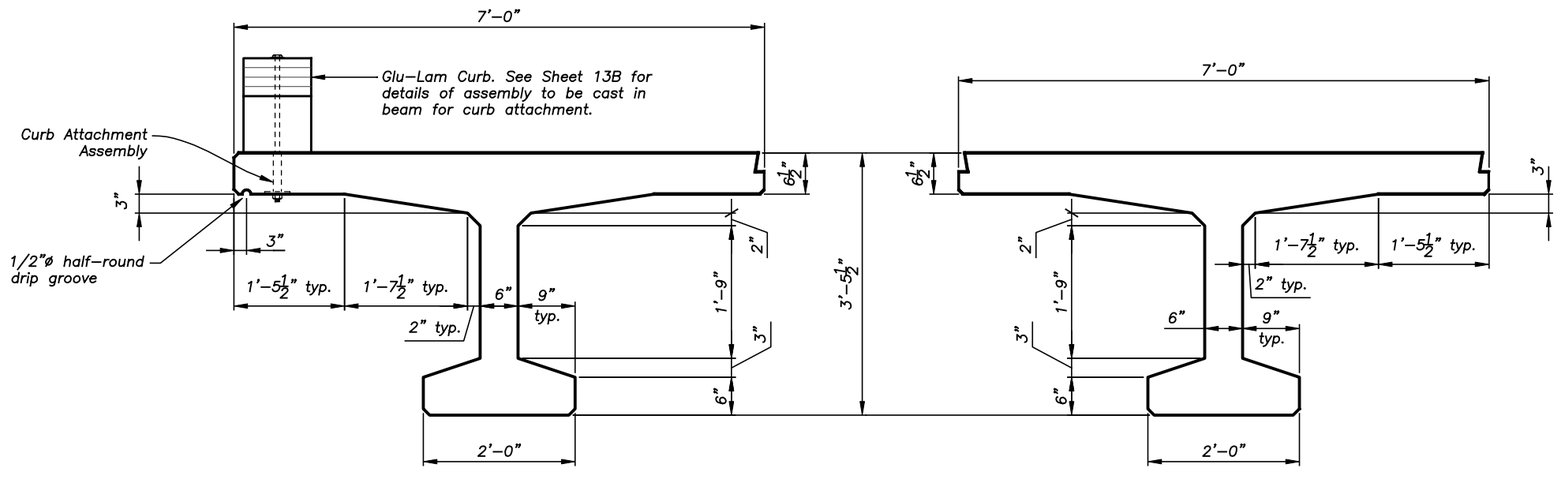
BID ALTERNATE NO. 2
ABUTMENT GRADE BEAM
OPTIONAL FIELD SPLICE

SHEET 9B OF 13B



SUPERSTRUCTURE PLAN

Scale: 1/8" = 1'



TYPICAL EXTERIOR BEAM

Scale: 1/2" = 1'

INTERIOR BEAM

Scale: 1/2" = 1'

PRESTRESSED BEAM NOTES:

PRESTRESSED CONCRETE BEAM DESIGN: Pretensioning is the only acceptable method of prestressing for this project.

The prestress fabricator shall provide the final design for all prestressed reinforcement and non–prestressed reinforcement in the section shown on this sheet. The design shall verify that allowable stress and ultimate strength requirements are met at all stages of construction. The final design shall be prepared by a licensed professional engineer whose signed seal shall be on the design documents. This design shall be submitted with the details of method, materials and equipment proposed for use in the prestressing operation as noted below and in the Standard Specifications 553. See General Notes on Sheet 2B for additional design and material specifications.

An alternate section of precast, prestressed concrete only may be proposed. The proposed alternate section may deviate 3" maximum in height and overall width must provide a 19 ft. clear opening between curbs. The finish grade elevation shall be maintained with adjustment made in the Grade Beam elevation. The alternate section must provide a minimum of 3' foot freeboard above the 100 year flood elevation shown on these Plans. The Contractor is responsible for revisions required in the end diaphragm reinforcement, connection to substructure, etc. (Note– Beams must be fabricated with an integral End Diaphragm). These revisions shall be submitted with the beam design as noted below.

Designs shall conform to Standard Specifications for Highway Bridges, 17th Edition, 2002.
Design notes as follows:

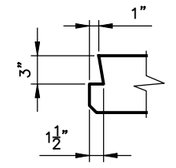
1. HS20–44 Live Load with Impact = 26%
2. Load Fraction as per AASHTO 3.23.4.
3. Total loss of prestress may be assumed to be 45 KSI
4. Superimposed dead load is 35 PSF for a future wearing surface. Superimposed dead load assumed to be equally distributed to the three beams in the section shown.
5. ½" of top flange shall be deducted to account for traffic wear in allowable stress checks at service after losses have occurred, beam web reinforcement design, and flexural strength determination.
6. Tension in precompressed tensile zone at service after losses have occurred is NOT allowed.

PRESTRESSED CONCRETE BEAMS: Prior to casting any prestressed members, calculations and shop drawings and complete details of the method, materials and equipment proposed for use in the prestressing operations shall be submitted a minimum of 21 days in advance of planned construction and shall bear the seal and signature of a professional engineer licensed in the state of Idaho.

FINISHING CONCRETE: The bottoms of all beam stems and exterior face of exterior beams shall be given a rubbed finish, except a concrete gray epoxy mortar using AASHTO M235 Class II Epoxy Resin Adhesive may be used instead of the specified sand–cement mortar to reduce curing time. The epoxy mortar shall be rubbed with cement prior to hardening. The ends of the beams shall have all holes or acceptable rock pockets patched and strands cut off flush or burned back.

FABRICATION, TRANSPORTATION, AND INSTALLATION OF PRESTRESSED BEAMS: Beams shall be erected using galvanized steel shims where necessary. Galvanized steel shims shall be the same size as the elastomeric bearing pads and shall be placed between the beams and the pads such that no more than 3/16" vertical variation exists between adjacent beam flanges at the centerline of bearing prior to attaching weld ties and filling shear keys with non–shrink mortar.

PAINTING OF WELD TIE CONNECTIONS AND GUARD ANGLES: All weld ties not covered by 1 inch or more of concrete shall be painted with one primer coat and two field coats. The field coats shall be aluminum paint conforming to AASHTO M69, Type II. The guard angles may be painted in the same way in lieu of galvanizing.



BEAM FABRICATOR MAY SUBMIT ALTERNATE GROUT KEY DETAIL FOR APPROVAL

GROUT KEY

Scale: 3/4" = 1'–0"

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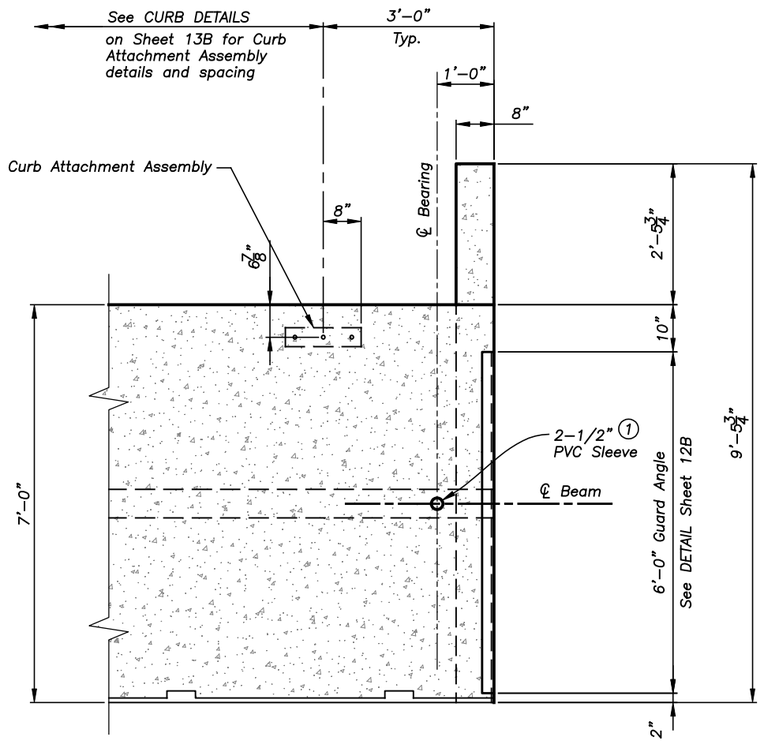
NORTH FORK SPRUCE CREEK
BRIDGE REPLACEMENT

BID ALTERNATE NO. 2
SUPERSTRUCTURE PLAN

SHEET 10B OF 13B

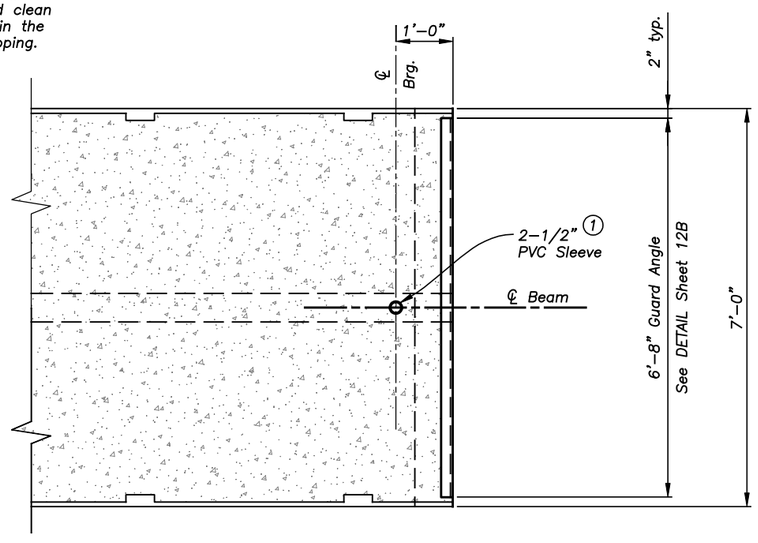


TYPICAL EXTERIOR BEAM

Scale: 1/2" = 1'–0"

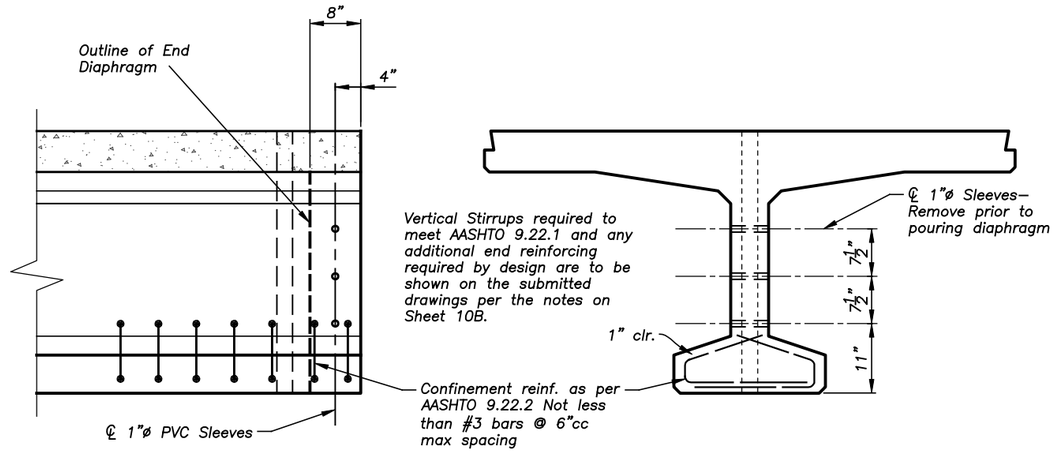
NOTE:

① 2–1/2" PVC Sleeve for Prestressed Beam to Grade Beam connection. See Abutment details. Remove sleeve and clean resulting blockout in the beam prior to shipping.



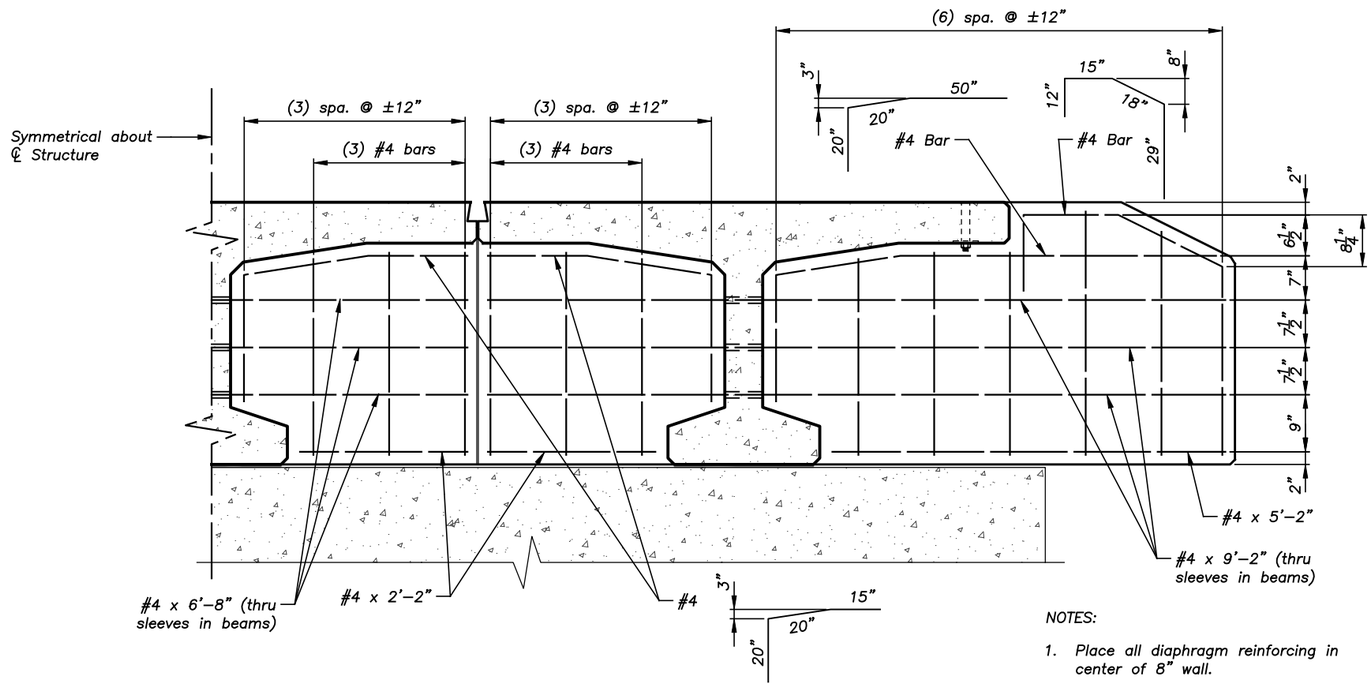
TYPICAL INTERIOR BEAM

Scale: 3/8" = 1'–0"



BEAM END DETAIL

Scale: 1/2" = 1'–0"



NOTES:

1. Place all diaphragm reinforcing in center of 8" wall.

END DIAPHRAGM REINFORCING

Scale: 1/2" = 1'–0"

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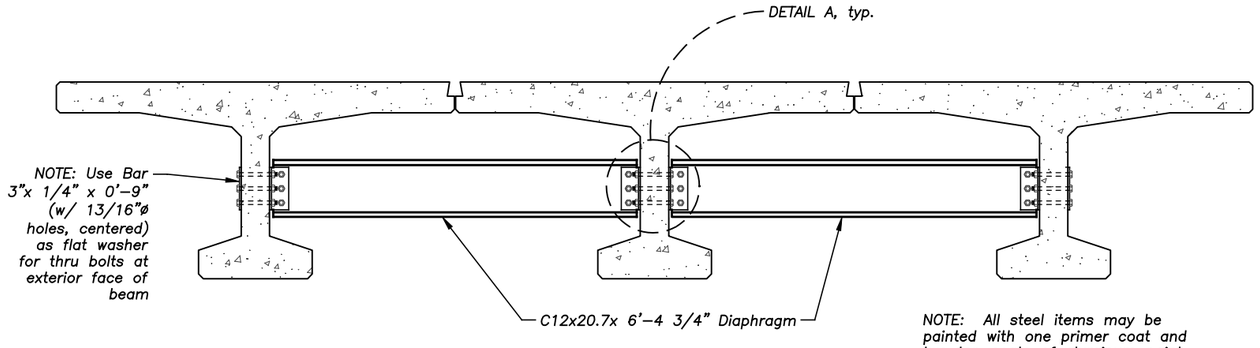
BID ALTERNATE NO. 2
SUPERSTRUCTURE DETAILS

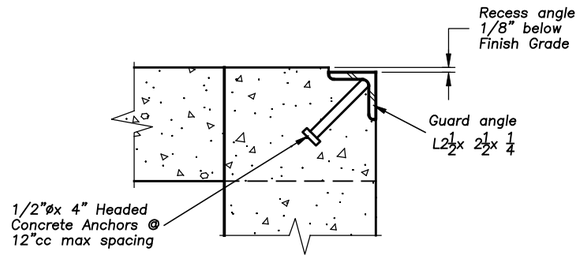
SHEET 11B OF 13B



NOTE: All steel items may be painted with one primer coat and two top coats of aluminum paint conforming to AASHTO M69, Type II in lieu of galvanizing.

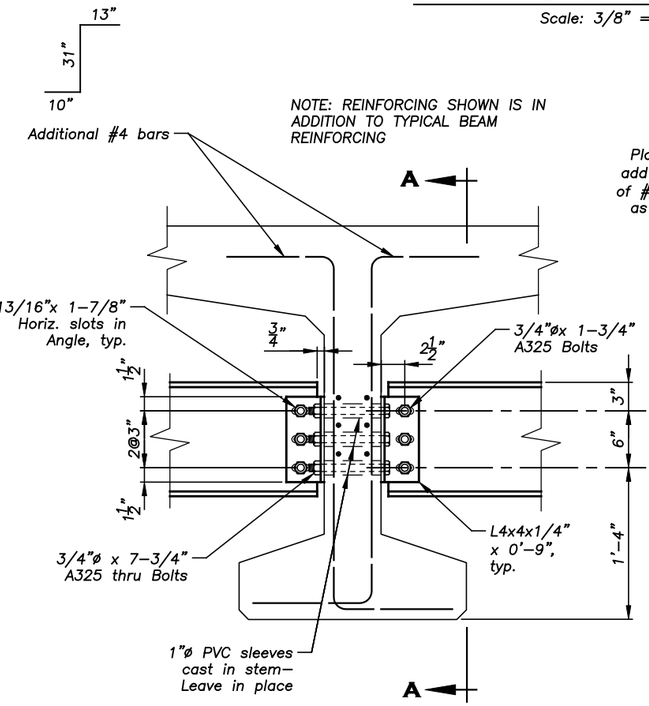
DIAPHGRAGM DETAIL

Scale: 3/8" = 1'–0"



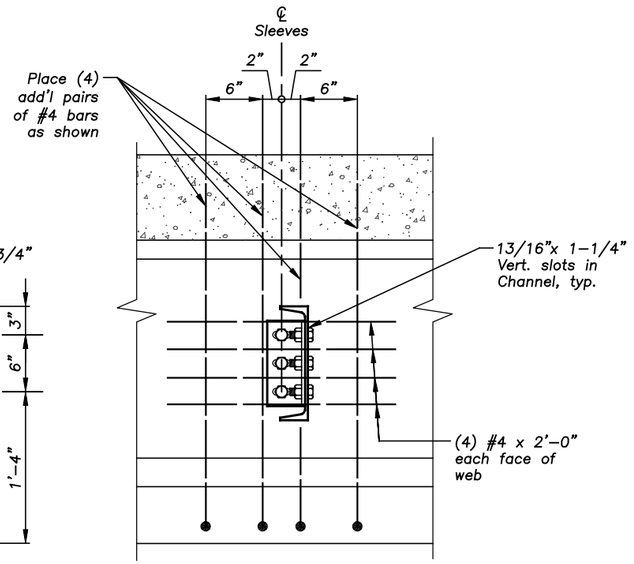
GUARD ANGLE DETAIL

Not to Scale

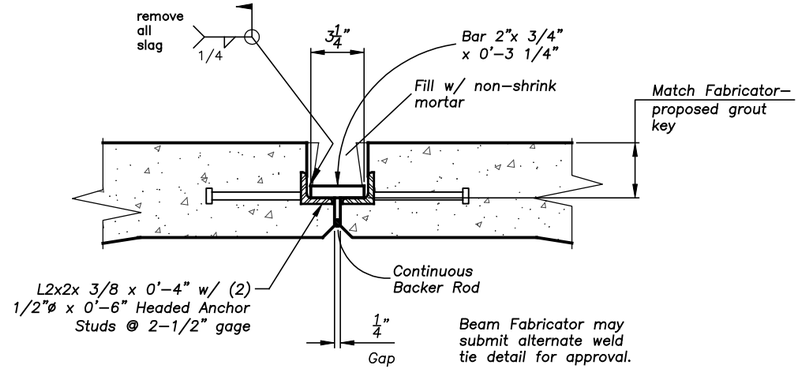


DETAIL A

Scale: 3/4" = 1'–0"



SECTION A-A



WELD TIE DETAIL

Not to Scale

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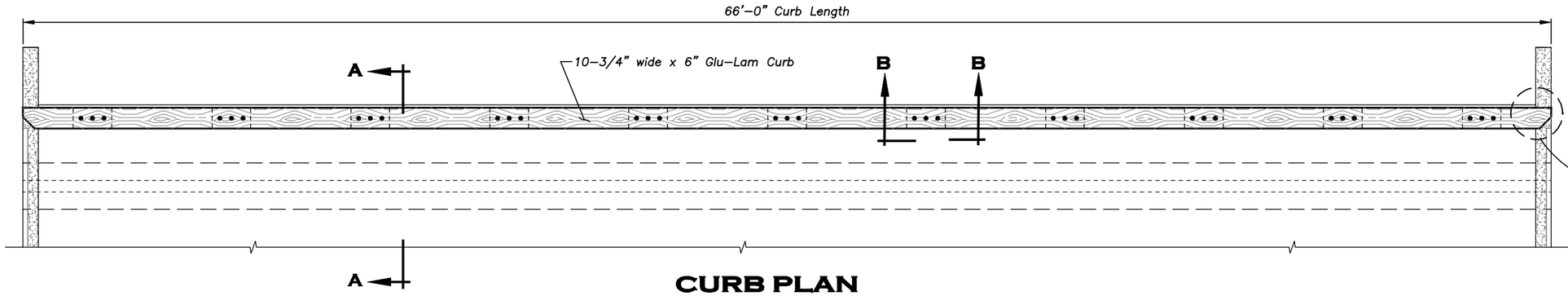
BRIDGE REPLACEMENT

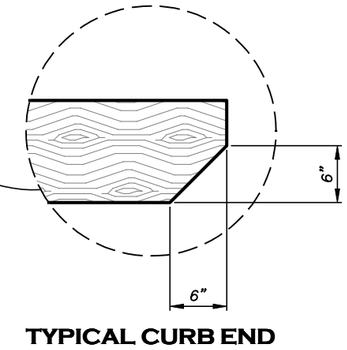
BID ALTERNATE NO. 2
SUPERSTRUCTURE DETAILS

SHEET 12B OF 13B

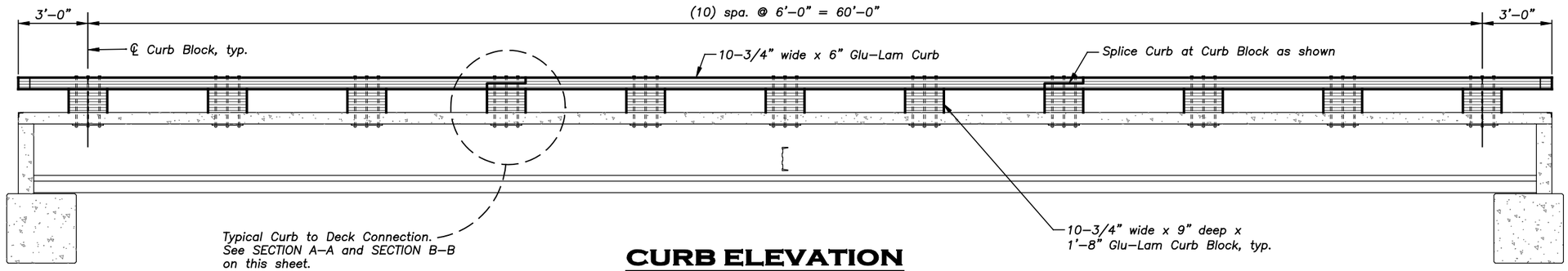


CURB PLAN

Scale: 3/16" = 1'

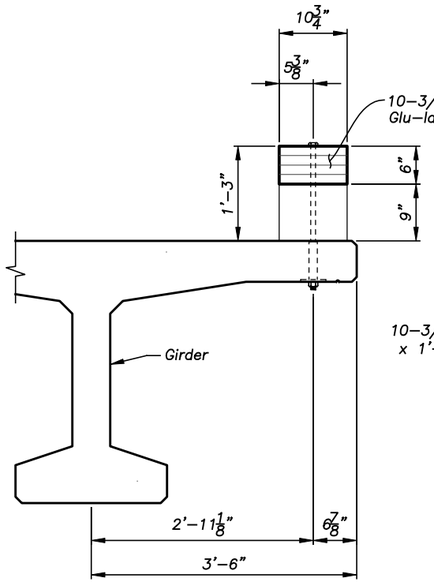


TYPICAL CURB END



CURB ELEVATION

Scale: 3/16" = 1'



SECTION A-A

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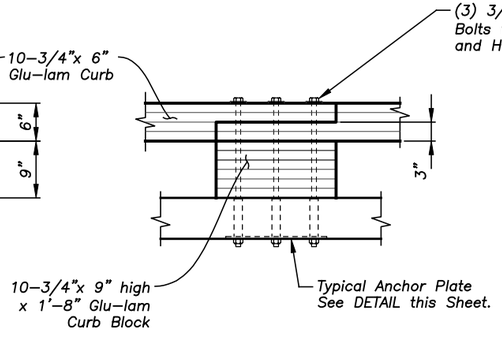

SECTION B-B

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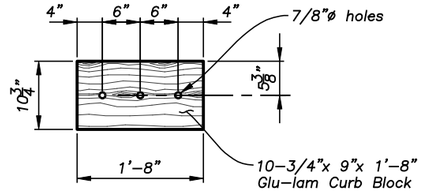

PLAN

CURB BLOCK

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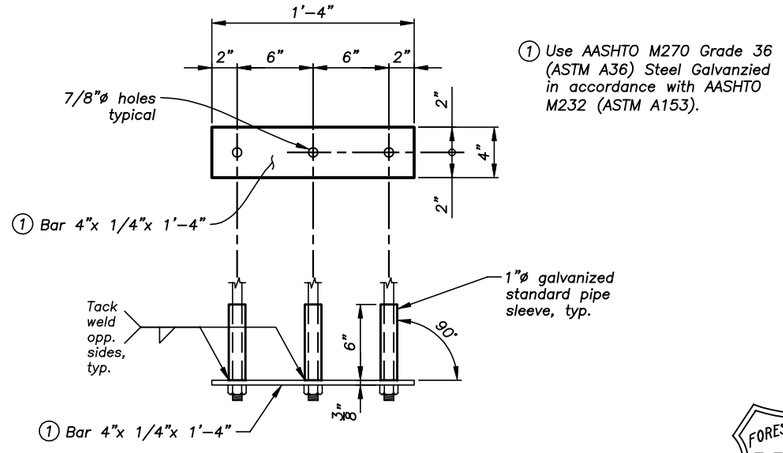

CURB ATTACHMENT ASSEMBLY

Not to Scale

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TIMBER CURB DETAILS

SHEET 13B OF 13B